CERAMFORGE

ENGINEERED CERAMICS

MSZ

Magnesia-Stabilized Zirconia (MSZ) Ceramic Parts by Ceramforge

At **CeramForge**, we specialize in manufacturing **Magnesia-Stabilized Zirconia (MSZ) ceramic parts,** engineered for **exceptional toughness, thermal stability, and wear resistance**. Our MG PSZ ceramics are stabilized with **3.25 wt% MgO (Magnesia),** providing superior resistance to thermal shock and crack propagation, making them ideal for demand- ing industrial applications.

Chemical Composition

Oxide Component	Typical Composition (%)
ZrO_2 (Zirconia)	>95.20%
MgO (Magnesia)	~3.15 to 3.45%
SiO_2 (Silica)	<0.2%
TiO_2, Fe_2O_3, CaO, Al_2O_3 (Trace Oxides)	<0.85%

Note: These values are approximate and may vary depending on the specific processing and material grade.

APPLICATIONS

Industrial & Wear Components

- Bearings, bushings, and valve seats
- Wear-resistant liners
- Pump components for corrosive environments
- High-performance structural components
- For Textile Machinery
- For Wire Drawing Machines

MSZ Properties

At **CeramForge**, we ensure **high precision, consis- tency, and durability** in our **MG PSZ ceramic parts,** delivering superior performance across diverse industries. Our **state-of-the-art process- ing techniques** allow us to meet the most demanding application requirements

Property	Units	MG PSZ
Density	g/cm^3	5.65-5.75
Color	-	YELLOW
4-Pt Flexural Strength (MOR), 20° C	MPa	545
Elastic Modulus, 20° C	GPa	200
Compressive Strength, 20° C	MPa	1700
Hardness – Vickers 500gm	kg/mm^2	1200
Fracture Toughness, K(I c)	MPa $m^{1/2}$	9.0
Thermal Conductivity	W/mK	2.2
Coef. of Thermal Expansion, 25-1000° C	1 X 10^{-6}/ °C	10.2
Volume Resistivity, 25° C	ohm-cm	$>10^{13}$
Dielectric Constant, 1 MHz	-	28
Dielectric Loss	-	0.001

Note: These values are approximate and may vary depending on the specific processing and material grade.

KEY PROPERTIES

- **High Fracture Toughness (8–12 MPa·$m^{1/2}$)**
  Excellent crack resistance, ideal for impact-prone applications.
- **Superior Wear & Abrasion Resistance**
  Outperforms alumina and other ceramics in high-friction environments.
- **Thermal Stability up to 1200°C**
  Exceptional resistance to thermal cycling and shock.
- **Chemical & Corrosion Resistance**
  Withstands aggressive environments, including acids and alkalis.
- **Low Thermal Conductivity**
  Ideal for high-temperature insulation applications.

Innovating Ceramics.
Advancing Industries.

For Further information,
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